Attorney Docket No. BRCK004/00US **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	Ralph N. CRABTREE	Examiner:	Tom Y Lu
Serial No.:	10/724,394	Art Unit:	2621
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For: **SYSTEMS AND METHODS FOR DETERMINING IF OBJECTS ARE IN A QUEUE**

U.S. Patent and Trademark Office
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REPLY AND AMENDMENT UNDER 37 C.F.R. 1.111

In response to the Office Action dated January 26, 2006, the Applicants submit the following Amendments and Remarks. A three-month extension for responding is hereby requested to July 26, 2006.

Amendments to the claims are reflected in the listing of claims, which begins on page 2 of this paper.

Remarks begin on page 12 of this paper.

In the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application. The status of each claim is indicated. Changes to the claims are shown with additions underlined and deletions in ~~strikethrough~~. Please cancel claims 1-60 without prejudice of the subject matter therein. Please add new claims 61-120. No new matter has been added by these amendments.

1-60. (Canceled)

61. (New) A method comprising:

detecting an object within a tracking zone defined by a first area using a sensor;

producing a position value of the object based on an indicator from the sensor, the position value being included in a track of the object, the position value including at least two position coordinates and a corresponding time value; and

associating the track of the object with at least one of a seed zone or a queue set based on the position value, the seed zone being defined by a second area from which a queue originates, the seed zone being associated with a seed location, the queue set being used to define the queue.

62. (New) The method of claim 61, wherein the object is a first object,

the method further comprising:

modifying the queue set to include a track of a second object when a queue parameter condition is satisfied based on a value calculated using the track of the first object and the track of the second object.

63. (New) The method of claim 62, wherein the second object is disposed outside of the seed zone.

64. (New) The method of claim 62, wherein the second object is disposed outside of a region of interest.

65. (New) The method of claim 61, wherein the associating includes associating the object with the seed zone when the object is located within the seed zone.

66. (New) The method of claim 61, wherein the associating includes associating the object with the seed zone and the queue set when the object is located within the seed zone and when a seed parameter condition is satisfied based on at least one of the track or a velocity of the object.

67. (New) The method of claim 61, wherein the associating includes associating the object with the queue set when the object is disposed outside of the seed zone and a queue parameter condition is satisfied based on the position value included in the track.

68. (New) The method of claim 61, further comprising:

calculating a plurality of values based on the position value of the object and a plurality of position values from a plurality of tracks included in the queue set, each track from the plurality of tracks being associated with a unique object from a plurality of objects, the associating with the queue set includes including the track of the object within the queue set when at least one value from the plurality of values satisfies a queue parameter condition, the queue parameter condition being used to define the queue set.

69. (New) The method of claim 61, further comprising:

detecting a change in the track of the object; and

repeating the producing and the associating based on the change.

70. (New) The method of claim 61, wherein the queue set includes a plurality of tracks,

the method further comprising:

identifying the object as a final object; and

closing the queue set when at least one of a queue parameter condition or a seed parameter condition is unsatisfied based on the track associated with the final object and each track from the plurality of tracks included the queue set.

71. (New) The method of claim 61, wherein the object is a first object, the method further comprising:

modifying the queue set to include a track of a second object when a queue parameter condition is satisfied based on a distance calculated between a position value of the track of the first object and a position value of the track of the second object, the queue parameter condition is unrelated to a region of interest.

72. (New) The method of claim 61, wherein the object is a first object, the method further comprising:

modifying the queue set to include a track of a second object when a distance calculated between a position value of the track of the first object and a position value of the track of the second object satisfies a queue parameter condition, the queue parameter condition is based only on a spatial value related to a single dimension.

73. (New) The method of claim 61, wherein the object is a first object, the method further comprising:

removing the track of the first object from the queue set when the first object is disposed within a service location, the service location being defined by an area within the seed zone.

74. (New) The method of claim 61, wherein the object is a first object, the method further comprising:

modifying the queue set to include a track of a second object when a queue parameter condition is satisfied based on a value calculated using a velocity of the first object and a velocity of the second object, the queue parameter condition is unrelated to a region of interest, the region of interest being defined by a third area within the tracking zone.

75. (New) The method of claim 61, wherein the object is a first object, the associating includes including the track of the first object in the queue set when a seed parameter condition is satisfied,

the method further comprising:

modifying the queue set to include a track of a second object when a queue parameter condition is satisfied based on a value calculated using the track of the first object and the track of the second object, the seed parameter condition and the queue parameter condition being different.

76. (New) The method of claim 61, wherein the seed zone is a fixed area within the tracking zone.

77. (New) The method of claim 61, wherein the seed zone is disposed outside of the seed location.

78. (New) The method of claim 61, wherein the seed location is a first seed location, the seed zone is associated with a second seed location.

79. (New) The method of claim 61, wherein the object is a person, the queue is a queue of people.

80. (New) The method of claim 61, wherein the seed location is at a fixed location within the tracking zone.

81. (New) An apparatus comprising:

a tracking system configured to detect, using a sensor, an object within a tracking zone, the tracking system being configured to produce a position value of the object based on an indicator from the sensor, the position value being included in a track of the object, the position value including at least two position coordinates and a corresponding time value; and

a processor system configured to associate the track of the object with at least one of a seed zone or a queue set based on the position value, the seed zone being defined by an area from which a queue originates, the seed zone being associated with a seed location, the queue set being used to define the queue.

82. (New) The apparatus of claim 81, wherein the processor system is configured to include a track of a second object in the queue set when a queue parameter condition is satisfied based on the track of the second object and the track of the first object, the second object being disposed outside of the seed zone.

83. (New) The apparatus of claim 81, further comprising a memory configured to store at least one of the queue set, the track, a queue parameter condition or a seed parameter condition.

84. (New) The apparatus of claim 81, wherein the object is a first object, the processor system is configured to include a track of a second object in the queue set when a queue parameter condition is satisfied based on a value calculated using the track of the first object and the track of the second object.

85. (New) The apparatus of claim 81, wherein the processor system is configured to associate the object with the seed zone when the object is located within the seed zone, the processor system is configured to associate the object with the queue set when a seed parameter condition is satisfied based on at least one of the position value included in the track or a velocity of the object.

86. (New) The apparatus of claim 81, wherein the processor system is configured to associate the track of the object with the queue set when the object is disposed outside of the seed zone and a queue parameter condition is satisfied based on the position value included in the track.

87. (New) The apparatus of claim 81, wherein the object is a first object, the processor system is configured to modify the queue set to include a track of a second object when a queue parameter condition is satisfied based on a distance calculated between a position value of the track of the first object and a position value of the track of the second object, the queue parameter condition is unrelated to a region of interest.

88. (New) The apparatus of claim 81, wherein the object is a first object, the processor system is configured to modify the queue set to include a track of a second object when a distance calculated between a position value of the track of the first object and a position value of the track of the second object satisfies a queue parameter condition, the queue parameter condition is based only on a spatial value related to a single dimension.

89. (New) The apparatus claim 81, wherein the object is a first object, the processor system is further configured to remove the track of the first object from the queue set when the first object is disposed within a service location, the service location being a location within the seed zone.

90. (New) The apparatus of claim 81, wherein the object is a first object, the processor system is configured to modify the queue set to include a track of a second object when a queue parameter condition is satisfied based on a value calculated using a velocity of the first object and a velocity of the second object, the queue parameter condition is unrelated to a region of interest, the region of interest being defined by a third area within the tracking zone.

91. (New) The apparatus of claim 81, wherein the processor system is configured to calculate a plurality of values based on the position value of the object and a plurality of position values from a plurality of tracks included in the queue set, each track from the plurality of tracks being associated with a unique object from a plurality of objects, the associating the track of the object with the queue set includes including the track of the object within the queue set when at least one value from the plurality of values satisfies a queue parameter condition, the queue parameter condition being used to define the queue set.

92. (New) The apparatus of claim 81, wherein the queue set includes a plurality of tracks, the processor system is configured to identify the object as a final object, the processor system being further configured to close the queue set when at least one of a queue parameter condition or a seed parameter condition is unsatisfied based on the track associated with the final object and each track from the plurality of tracks included the queue set.

93. (New) The apparatus of claim 81, wherein the processor system is configured to detect a change of the track of the object, the processor system is further configured to associate the track of the object with at least one of a seed zone or a queue set based on the change.

94. (New) The apparatus of claim 81, wherein the seed zone is a fixed area within the tracking zone.

95. (New) The apparatus of claim 81, wherein the object is a person, the queue is a queue of people.

96. (New) The apparatus of claim 81, wherein the object is a first object, the first object is associated with the queue when the first object is associated with a second object associated with the seed zone and included in the queue set, the second object is associated with the seed zone and included in the queue set when a seed parameter condition is satisfied based on a position value of the second object and the area defining the seed zone.

97. (New) The apparatus of claim 81, wherein the track includes a plurality of position values.

98. (New) A method comprising:

associating with a seed zone a track of a first object when the first object is located within the seed zone, the seed zone being associated with a seed location, the track of the first object being included in a queue set when a seed parameter condition is satisfied based on the track of the first object, the queue set being used to define a queue associated with the seed location; and

associating a track of a second object with the track of the first object when a queue parameter condition is satisfied, the track of the second object being included in the queue set when the track of the second object is associated with the track of the first object, the second object being disposed outside of the seed zone.

99. (New) The method of claim 98, wherein the second object is disposed outside of a region of interest.

100. (New) The method of claim 98, wherein the seed zone is disposed outside of the seed location.

101. (New) The method of claim 98, wherein the track of the first object includes a position value, the position value includes at least two position coordinates and a time value.

102. (New) The method of claim 98, wherein the associating includes associating when a queue parameter condition is satisfied based on a value calculated using the track of the first object and the track of the second object.

103. (New) The method of claim 98, wherein the associating includes associating a track of a third object with the track of the second object when a queue parameter condition is satisfied, the track of the third object being included in the queue set when the track of the third object is associated with the track of the second object, the third object being disposed outside of the seed zone.

104. (New) The method of claim 98, further comprising determining that the second object is a new object.

105. (New) The method of claim 98, further comprising detecting a third object, the detecting triggering a calculation based on a track of the third object and at least one of the track of the second object and the track of the first object.

106. (New) The method of claim 98, wherein the seed location is a fixed location, the seed zone is defined by a first area that is disposed outside of a second area defined by the seed location.

107. (New) The method of claim 98, wherein the first object is disposed outside of the seed location.

108. (New) A method comprising:

receiving a queue set including a track of a first object and a track of a second object, the track of the first object including a first position value, the track of the second object including a second position value;

receiving a track of a third object; and

including a track of a third object in the queue set when a queue parameter condition is satisfied based on a calculated value, the calculated value being based on a third position value associated with the track of the third object and at least one of the first position value or the second position value.

109. (New) The method of claim 108, wherein at least one of the first object or the second object is disposed outside of a seed zone associated with a seed location.

110. (New) The method of claim 108, wherein the third object is disposed outside of a seed zone.

111. (New) The method of claim 108, wherein at least one of a seed parameter condition or a queue parameter condition is satisfied based on at least one of a first value or a second value, the first value is calculated based on the seed zone and the track of the first object, the second value is calculated based on the seed zone and the track of the second object.

112. (New) The method of claim 108, wherein the receiving the track of the third object includes detecting using a sensor the track of the third object within a tracking zone.

113. (New) The method of claim 108, the track of the third object is included in a plurality of tracks, each track from the plurality of tracks is associated with a unique object from a plurality of objects.

114. (New) The method of claim 108, wherein the queue set being is associated with a seed zone, the seed zone is associated with a fixed seed location.

115. (New) The method of claim 108, wherein the position value of the first track includes a position coordinate and a corresponding time value, the position coordinate includes a first coordinate and a second coordinate.

116. (New) A method comprising:

detecting, using a sensor, an object within a tracking zone defined by a first area;

producing a position value of the object based on an indicator from the sensor, the position value being included in a track of the object, the position value including at least two position coordinates and a corresponding time value;

determining whether the track of the object is included in a seed zone, the seed zone being defined by a second area from which a queue originates, the seed zone being associated with a seed location; and

selecting at least one of a seed parameter condition or a queue parameter condition based on whether the object is included in the seed zone.

117. (New) The method of claim 116, further comprising including the track of the object in a queue set when a seed parameter condition is satisfied, the queue set being used to define the queue.

118. (New) The method of claim 116, further comprising including the track of the object in a queue set when a queue parameter condition is satisfied, the queue set being used to define the queue.

119. (New) The method of claim 116, wherein the object is a first object, the queue parameter condition is satisfied based on a value calculated using the track of the first object and a track of a second object, the second object being disposed within at least one of the seed zone or the tracking zone.

120. (New) The method of claim 116, further comprising detecting a change in the track of the object,

the method further comprising:

determining whether the object is included in the seed zone based on the change.

Remarks

Reconsideration of this Application is respectfully requested. Upon entry of the foregoing amendment claims 61-120 are pending in the application, of which claims 61, 81, 98, 108, and 116 are independent. No new matter has been introduced by way of the foregoing amendment.

The Claims Are Patentable Over the Crabtree and the Janky References

Claims 1-60 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,185,134 to Crabtree et al ("the Crabtree reference"). Claims 1-60 have been canceled. Accordingly, the rejection of claims 1-60 under 35 U.S.C. §102(b) based on the Crabtree reference has been rendered moot.

Claims 1-9, 12-42 and 47-60 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,067,031 to Janky et al ("the Janky reference"). Claims 10-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Janky. Claims 1-42 and 47-60 have been canceled. Accordingly, the rejections under 35 U.S.C. §102(b) and 35 U.S.C. § 103(a) based on the Janky reference have been rendered moot.

Independent claim 61 recites, "associating the track of the object with at least one of a seed zone or a queue set based on the position value, the seed zone being defined by a second area from which a queue originates, the seed zone being associated with a seed location, the queue set being used to define the queue." Accordingly, the Applicant respectfully submits that independent claim 61 is allowable over the Crabtree and the Janky references, and any combination thereof. Additionally, claims 62-80, which depend from claim 61 are allowable over the Crabtree and Janky references, and any combination thereof, at least because of their dependency from claim 61.

Independent claim 81 recites, "a processor system configured to associate the track of the object with at least one of a seed zone or a queue set based on the position value, the seed zone being defined by an area from which a queue originates, the seed zone being associated with a seed location, the queue set being used to define the queue." Accordingly, the Applicant respectfully submits that independent claim 81 is allowable over the Crabtree and the Janky references and any combination thereof.

Additionally, claims 82-97, which depend from claim 82 are allowable over the Crabtree and Janky references, and any combination thereof, at least because of their dependency from claim 82.

Independent claim 98 recites, "associating with a seed zone a track of a first object when the first object is located within the seed zone, the seed zone being associated with a seed location, the track of the first object being included in a queue set when a seed parameter condition is satisfied based on the track of the first object, the queue set being used to define a queue associated with the seed location." Accordingly, the Applicant respectfully submits that independent claim 98 is allowable over the Crabtree and the Janky references and any combination thereof. Additionally, claims 99-107, which depend from claim 98 are allowable over the Crabtree and Janky references, and any combination thereof, at least because of their dependency from claim 98.

Independent claim 98 recites, "including a track of a third object in the queue set when a queue parameter condition is satisfied based on a calculated value, the calculated value being based on a third position value associated with the track of the third object and at least one of the first position value or the second position value." Accordingly, the Applicant respectfully submits that independent claim 108 is allowable over the Crabtree and the Janky references and any combination thereof. Additionally, claims 109-115, which depend from claim 108 are allowable over the Crabtree and Janky references, and any combination thereof, at least because of their dependency from claim 108.

Independent claim 116 recites, "determining whether the track of the object is included in a seed zone, the seed zone being defined by a second area from which a queue originates, the seed zone being associated with a seed location." Accordingly, the Applicant respectfully submits that independent claim 116 is allowable over the Crabtree and the Janky references and any combination thereof. Additionally, claims 117-120, which depend from claim 116 are allowable over the Crabtree and Janky references, and any combination thereof, at least because of their dependency from claim 116.

Conclusion

All of the stated grounds of rejection have been rendered moot. The Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and that such rejections be withdrawn. The Applicant believes that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that further personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

The Director is hereby authorized to charge any appropriate fees under 37 C.F.R.§§ 1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1283.

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